Comment

This case indicates that synergism may occur between lithium and spironolactone, which might be clinically useful in patients resistant to lithium or in whom low dose lithium is advisable. Moreover, this case also indicates that spironolactone alone may maintain a manic patient in remission. Further research is needed to assess the mode of action of spironolactone alone or in combination with lithium in the treatment of mania.

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Dentists, dental nurses, and brain tumours

There is some evidence to suggest that exogenous factors might be important in the origin of brain tumours.[1-3] We investigated the risk of intracranial tumours in several occupational groups in a research programme. In this report we present the risks of glioblastoma among dentists and dental nurses.

Subjects, methods, and results

Cohorts of dentists and dental nurses aged 20-64 were identified from the Swedish census of 1960, and people within these cohorts who had cancer were identified from a record linkage to the cancer register for the years 1961-79. There were 3454 male dentists, 1125 female dentists, and 4662 female dental nurses.

The histopathological classification showed that of the brain tumours (ICD 193·0) in the cohorts, 18 were glioblastomas (astrocytoma III-IV according to Kernohan and Sayre[4]), four gliomas (astrocytoma I-II), and six meningiomas. The observed numbers of cases of cancer were compared with the corresponding expected numbers, calculated from the cumulative incidences for all employed people and the numbers of dentists and dental nurses. Stratification was by age (five year age groups), sex, and county. The cumulative incidences were calculated as the proportion of the census population that was recorded in the cancer registry. The analysis was based on the standardised morbidity ratio—that is, the ratio of the observed number of cases to the expected number—with 95% confidence limits.[5] For comparison standardised morbidity ratios for physicians and nurses were also calculated.

The table shows that among dentists and dental nurses glioblastoma was about twice as common as expected. For glioma the standardised morbidity ratio for the entire study population was 1·8, although with a wide confidence interval, while for meningioma the standardised morbidity ratio was 1·3. For all tumours combined the standardised morbidity ratio was 1·0 or 1·1 for all the different groups. The standardised morbidity ratio for glioblastoma among physicians and nurses was estimated as 1·3 and 1·2, respectively, with unity well within the confidence intervals.

Comment

Although the 1960 census gave the number of people whose present occupation was as a dentist or dental nurse, it did not provide information on the duration or level of exposure to products used in dental work. There might also have been errors in the reporting or coding of occupations in the census. Thus we may have included in our study people with little or no exposure to products used in dental work which could lead to underestimation of the increased risk. For 17 of the 18 cases of glioblastoma we were able to locate and review the medical records and thus determined that all these patients had indeed been assigned the diagnosis of glioblastoma. The basis for the diagnosis was either biopsy or necropsy findings. We did not take into account deaths from competing causes, but although this might possibly differ between people in the dental profession and the general population it is unlikely to do so only in respect of glioblastoma. Random fluctuations might explain the observed excess risk, but against this must be set the consistency of the results, and, in particular, the similarity of the standard mortality ratio's for dentists and dental nurses and for male and female dentists.

In conclusion, we think it unlikely that the sources of error mentioned above or factors known to be related to glioblastoma explain the observed excess risk. Most probably the origin is some occupational factor common to dentists and dental nurses—for example, amalgam, chloroform, or radiography.

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*Observed and expected numbers of tumours and standardised morbidity ratios among dentists and dental nurses**

Diagnosis and category	Observed No of tumours	Expected No of tumours	Standard morbidity ratio	95% Confidence limit
Glioblastoma (astrocytoma III-IV)	18	8·47	2·1	1·3-3·4
Dentists, male	9	4·56	2·0	0·9- 3·7
Dentists, female	3	1·22	2·5	0·5- 7·2
Dental nurses, female	6	2·69	2·2	0·8- 4·9
Physicians	11	8·48	1·3	0·6-2·3
Nurses, female	23	19·36	1·2	0·8-1·8
Glioma (astrocytoma I-II)	4	2·20	1·8	0·5-4·7
Dentists, male	2	0·99	2·0	0·2- 7·3
Dentists, female		0·24	0·0	0·0-15·4
Dental nurses, female	2	0·97	2·1	0·2- 7·4
Meningioma	6	4·59	1·3	0·5-2·8
Dentists, male	4	1·56	2·6	0·7- 6·6
Dentists, female	1	1·00	1·0	0·0- 5·6
Dental nurses, female	1	2·03	0·5	0·0- 2·7
All tumours	596	572·31	1·0	1·0-1·1
Dentists, male	288	276·20	1·0	0·9- 1·2
Dentists, female	97	98·78	1·0	0·8- 1·2
Dental nurses, female	211	197·33	1·1	0·9- 1·2

*Glioma and meningioma controlled only for sex and age; other diagnoses controlled for sex, age, and county.